Economic Evaluation Supplement
Climate Change Draft Scoping Plan Pursuant to AB 32
The California Global Warming Solutions Act of 2006

Appendix V
Impacts on Businesses

1 INTRODUCTION

This appendix provides additional background on the calculation of the potential effects of the Preliminary Recommendation from the Draft Scoping Plan on business, particularly small business. Section 38560(e) of the California Global Warming Solutions Act of 2006 (AB 32) requires the Air Resources Board to consider the potential for adverse effects on small businesses when developing its Scoping Plan. The Preliminary Recommendation approach in the Plan promotes energy efficiency through better management of energy resources and the use of more energy efficient technologies, which is expected to more than offset likely increases in the unit price of energy. On balance, the Preliminary Recommendation is expected to reduce electricity expenditures for average California customers by 5 percent in 2020 relative to business-as-usual according to a recent analysis by Energy and Environmental Economics, Inc. (E3).[1] Based on estimates of reduced natural gas use in California, similar declines in average natural gas bills is also likely. We estimate that total natural gas use in California will decrease by 18 percent, which would more than offset the 8 percent increase in natural gas prices estimated by E-DRAM. Because both the projected decrease in natural gas use and price increase are aggregate figures for all of the California economy, this analysis conservatively uses an estimate of no change in natural gas bills. Natural gas market complexity, vast differences in business energy consumption characteristics, combined with a lack of adequate data prevent a more detailed analysis of such savings. Further, the transportation measures in the Plan will bring about significant savings to businesses that rely heavily on transportation fuels for their business. However, for the analysis presented here, there is not sufficient data to

[1] Recent analysis from Energy and Environmental Economics, Inc. [based on their GHG Calculator, CPUC/CEC GHG Docket (CPUC Rulemaking.06.04.009, CEC Docket 07-OIIP-01), available at http://www.ethree.com/cpuc_ghg_model.html] forecasts that a package of greenhouse gas reduction measures similar to the Preliminary Recommendation in the Draft Scoping Plan would deliver a 5 percent decrease in electricity expenditures relative to business-as-usual in 2020. This change is being used as a proxy for the bill impacts for the average California electricity customer. Changes to individual entities will deviate from the average and the E3 analysis does not predict how these savings will be distributed among customers. The E3 analysis focuses on direct programmatic measures and does not include the incremental price impact of the cap and trade program, which will depend upon allowance price, allocation strategy, the capped sector industry response, and other program design decisions.

represent the benefits to business due to reduced consumption of transportation fuels resulting from measures in the Plan.

The analysis presented in this section provides a financial assessment of the impacts of the Preliminary Recommendation on California businesses. The assessment resulted in the following findings.

- Businesses in general are expected to experience no significant change in total energy costs.
- Small businesses in almost every industry spend a greater percentage of revenue on energy than large businesses.
- As a result of implementing the Preliminary Recommendation approach California business ranking in terms of electricity expenditures per dollar of sales changes from 7th highest to the 19th highest in the nation, considerably improving California business competitive position vis-à-vis out-of-state businesses.
- Large businesses are likely to be more responsive to the changes required by the Draft Scoping Plan than small businesses because of their greater ability to invest in energy efficient technologies to achieve energy savings, thus underscoring the need to explore options for assisting small business during the implementation of the plan.

2 DATASETS

Under a contract to ARB, Dun and Bradstreet (D&B) created a statistical data model that estimates the portion of revenue that businesses spend on electricity and natural gas bills. The model is based on all of D&B marketing files of approximately 17 million businesses nationwide including over 2.1 million from California. The annual spending on electricity was calculated for affected businesses as follows:

- D&B collected monthly electrical bills data for approximately 628,000 businesses from 18 electrical utility providers nationwide, including two California utilities from April 2007 to March 2008.
- Annual spending on electricity was calculated for these businesses by summing up monthly bills.
- Of the 628,000 businesses nationwide for which D&B collected electricity bill data, D&B had revenue data for 210,000 businesses.
- Revenue data were available for a greater number of large businesses in the sample. Thus, the sample distribution was adjusted to represent the true universe distribution of the D&B database of 17 million businesses.
- Analysis of the data was provided based on a number of characteristics such SIC (Standard Industrial Classification) Code, business size.

The D&B data on natural gas spending were not as extensive as its data on electricity spending. However, D&B provided data on natural gas spending for several industries

at the national level. These data, along with electricity spending data, were used to form a complete picture of the impact that energy price changes may have on small business due to implementation of the Preliminary Recommendation in the Plan.

3 METHODOLOGY

The Draft Scoping Plan measures are expected to change the energy costs for most businesses in California. The change in energy spending by California businesses may alter their profitability, thus the need for the analysis. Since profitability data were not available for businesses in the D&B database, the change in energy spending as a percentage of revenue was used as a proxy for the change in business before-tax profitability, though this method does not account for changes in economic output from implementing the Preliminary Recommendation. Estimating the change in energy spending by businesses provides a snapshot analysis of the likely impact that energy costs may have on businesses in California.

The calculations were based on the following assumptions:

(1) D&B national data were used to calculate business electricity and natural gas spending as a percentage of revenue;
(2) Based on expert opinions, the average electricity bill for all California customers is expected to decline by about 5 percent relative to business-as-usual which was assumed to represent California businesses;
(3) Expenditures for natural gas are assumed to remain the same as a conservative assumption balancing the projected 18 percent decrease in natural gas consumption in California with E-DRAM's projected natural gas price increase of 7.8 percent;
(4) Data on natural gas spending were only available for industries nationwide. Spending on natural gas for a typical California firm in each industry is expected to be similar to a typical national firm in that industry.

4 BUSINESS COMPETITIVENESS

California ranked 7th in the nation based on the percentage of revenue a business, on the average, spends on the electricity (Table V-1). California businesses are currently spending less than 3 percent of their revenues on electricity. As stated above, the average electricity bill for businesses is expected to decline by 5 percent in 2020 as a result of the Draft Scoping Plan relative to business-as-usual. A 5 percent decline in the electricity spending for business would favorably push back California's ranking from 7th highest to 19th highest in the nation, considerably improving California's competitive position compared to other states.

Table V-1. Spending on Electricity as a Percentage of Revenue by State

State	Business No.	Before Regulation		After Regulation	
		%Spending	Ranking	%Spending	Ranking
Georgia	595,952	3.26	1	3.26	1
Louisiana	226,355	3.26	2	3.26	2
Arizona	300,690	3.24	3	3.24	3
Wisconsin	289,720	3.10	4	3.10	4
Alaska	39,518	3.05	5	3.05	5
Montana	307,026	3.00	6	3.00	6
California	**2,152,141**	**2.94**	**7**	**2.79**	**19**
Maine	73,452	2.90	8	2.90	7
West Virginia	70,068	2.90	9	2.90	8
Washington DC	47,506	2.90	10	2.90	9
Wyoming	38,782	2.90	11	2.90	10
Vermont	43,492	2.89	12	2.89	11
South Dakota	53,703	2.88	13	2.88	12
Indiana	104,859	2.87	14	2.87	13
New Mexico	96,922	2.86	15	2.86	14
Montana	71,842	2.84	16	2.84	15
Delaware	45,393	2.84	17	2.84	16
Hawaii	61,410	2.83	18	2.83	17
North Dakota	44,066	2.81	19	2.81	18
Arkansas	142,205	2.79	20	2.79	20

Table V-2 displays the percentage of the revenues spent on electricity for the top 20 California industries compared to the same industries nationwide. For most industries, California businesses spend slightly more on electricity than similar businesses nationwide. However, the majority of the listed business categories are those that serve local markets such as trailer parks and camps, hotels, barbershops, coin-operated laundries, etc. Out-of-state businesses cannot serve these local markets. As a result, California businesses are unlikely to experience a competitive pressure from out-of-state businesses to lower the prices of their products; therefore, they experience increased profitability if their electricity costs decline.

Table V-2. List of 20 Industries with Highest Percentage of Revenue Spending on Electricity

SIC	Industry Description	CA Average %	US Average %
8641	Civic and Social Associations	8.6	7.6
7032	Sporting and Recreational Camps	8.2	7.7
7033	Trailer Parks and Campsites	8.2	8.2
7021	Rooming and Boarding Houses	7.4	6.8
7219	Laundry and Garment Services, NEC	6.9	6.5
7041	Membership-basis Organization Hotels	6.9	6.4
7241	Baber Shops	6.9	6.3
5461	Retail Bakeries	6.9	6.1
8231	Libraries	6.8	5.8
6719	Holding Companies, NEC	6.6	6.1
5813	Drinking Places	6.4	6.0
7011	Hotels and Motels	6.4	6.1
7215	Coin-operated Laundries and Cleaning	6.2	5.5
7231	Beauty Shops	6.2	5.8
7217	Carpet and Upholstery Cleaning	6.1	5.5
5441	Candy, Nut, and Confectionery Stores	6.0	5.5
4941	Water Supply	6.0	5.8
0259	Poultry and Egg, NEC	5.9	6.4
8351	Child Day Care Services	5.9	5.4
8361	Residential Care	5.8	5.2

Note: NEC: Not elsewhere classified.

Table V-3 provides cumulative spending on both electricity and natural gas for the listed industries. As shown, total electricity and natural gas expenditures as a percentage of revenue for the twenty highest affected industries in California varies from a high of 22.2 percent to a low of 7.8 percent.

Table V-3. List of Top 20 Industries California with Highest Percent of Revenue Spending on Energy Without the Scoping Plan

SIC	Industry Description	%Spending on Electricity	%Spending on Natural Gas	%Spending Total
7215	Coin-operated Laundries and Cleaning	6.2	16.0	22.2
7219	Laundry and Garment Services, NEC	6.9	8.4	15.3
8641	Civic and Social Associations	8.6	5.8	14.4
7021	Rooming and Boarding Houses	7.4	6.9	14.3
7041	Membership-basis Organization Hotels	6.9	6.8	13.7
7033	Trailer Parks and Campsites	8.2	5.1	13.3
7241	Baber Shops	6.9	5.0	11.9
6719	Holding Companies, NEC	6.6	5.2	11.8
7011	Hotels and Motels	6.4	4.9	11.3
7032	Sporting and Recreational Camps	8.2	2.8	11.0
8351	Child Day Care Services	5.9	4.4	10.3
5461	Retail Bakeries	6.9	3.2	10.1
8231	Libraries	6.8	3.3	10.1
5813	Drinking Places	6.4	3.6	10.0
7231	Beauty Shops	6.2	3.7	9.9
7217	Carpet and Upholstery Cleaning	6.1	1.9	8.9
8361	Residential Care	5.8	3.1	8.9
4941	Water Supply	6.0	2.7	8.7
5441	Candy, Nut, and Confectionery Stores	6.0	1.8	7.8
0259	Poultry and Egg, NEC	6.0	n.a.	n.a.

Notes: NEC: Not elsewhere classified
n.a.: not available.

Assuming that the Preliminary Recommendation in the Plan decreases electricity expenditures in California by 5 percent and leaves natural gas expenditures unchanged, the average percent of revenue spent on energy by California firms in Table V-3 will decrease by 0.3 percent for the coin-operated laundries and cleaning businesses (high end users), and also decline by 0.3 percent for Candy, Nut, and Confectionery businesses (the low end users). Table V-4 recreates the 20 top high users of combined electricity and natural gas in Table V-3 after the expenditure effects are reflected. Most businesses experience no significant change in their energy expenditures.

Table V-4. List of Top 20 Industries California with Highest Percent of Revenue Spending on Energy With the Scoping Plan

SIC	Industry Description	%Spending on Electricity	%Spending on Natural Gas	%Spending Total
7215	Coin-operated Laundries and Cleaning	5.9	16.0	21.9
7219	Laundry and Garment Services, NEC	6.6	8.4	15.0
8641	Civic and Social Associations	8.2	5.8	14.0
7021	Rooming and Boarding Houses	7.0	6.9	13.9
7041	Membership-basis Organization Hotels	6.6	6.8	13.4
7033	Trailer Parks and Campsites	7.8	5.1	12.9
7241	Baber Shops	6.6	5.0	11.6
6719	Holding Companies, NEC	6.3	5.2	11.5
7011	Hotels and Motels	6.1	4.9	11.0
7032	Sporting and Recreational Camps	7.8	2.8	10.6
8351	Child Day Care Services	5.6	4.4	10.0
5461	Retail Bakeries	6.6	3.2	9.8
8231	Libraries	6.5	3.3	9.8
5813	Drinking Places	6.1	3.6	9.7
7231	Beauty Shops	5.9	3.7	9.6
7217	Carpet and Upholstery Cleaning	5.8	1.9	7.7
8361	Residential Care	5.5	3.1	8.6
4941	Water Supply	5.7	2.7	8.4
5441	Candy, Nut, and Confectionery Stores	5.7	1.8	7.5
0259	Poultry and Egg, NEC	5.7	n.a.	n.a.

Notes: NEC: Not elsewhere classified
n.a.: not available.

5 SMALL BUSINESS IMPACT

As stated, the D&B data on natural gas spending were not as extensive as its data on electricity spending. The following analysis, thus, could only be performed based on business electricity spending in the United States. Classifications of business expenditures on electricity by employee size show that small businesses tend to spend a larger share of their business expenditures on electricity than larger businesses. Thus, a reduction in electricity expenditures is expected to benefit small businesses relatively more than large businesses.

The smaller a business is, the larger its share of spending on electricity. As shown in Figure V-1, small businesses with a single employee spend 3.3 percent of each sales dollar on electricity, while businesses with 500 or more employees spend only 0.30 percent. This represents 11 times greater spending on electricity as a percentage of revenue for small businesses than for large businesses. A 5 percent reduction in electricity expenditures would reduce small business spending on electricity from 3.3 percent to 3.1 percent of each sales dollar while reducing large business spending from 0.30 to 0.29 percent of each sales dollar.

Figure V-1. Percent of Revenue Spending on Electricity by Business Employee Size

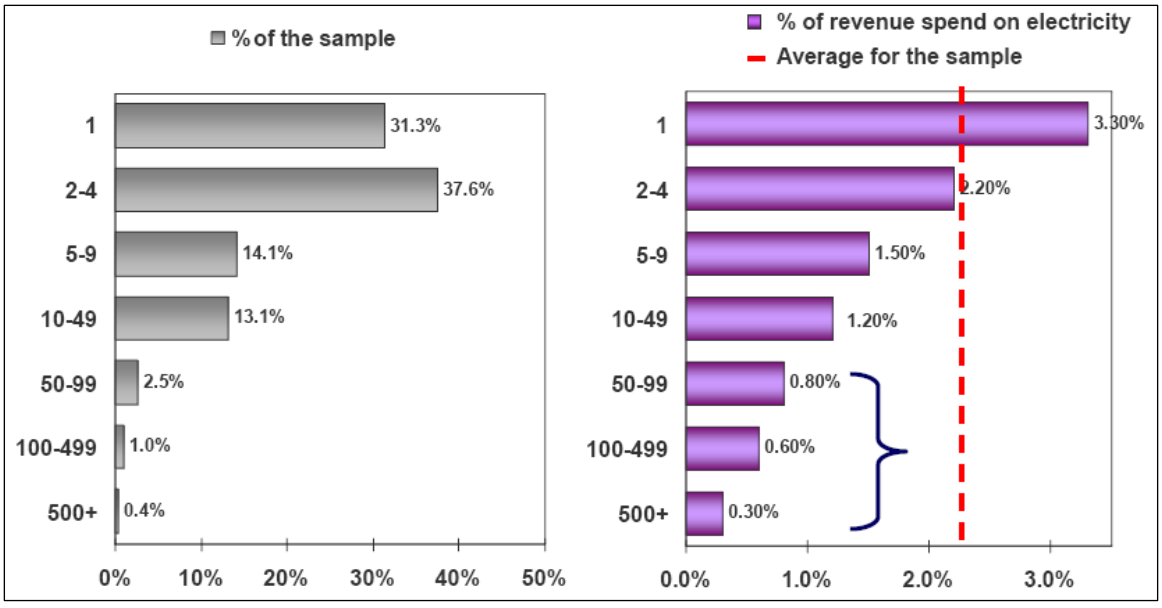
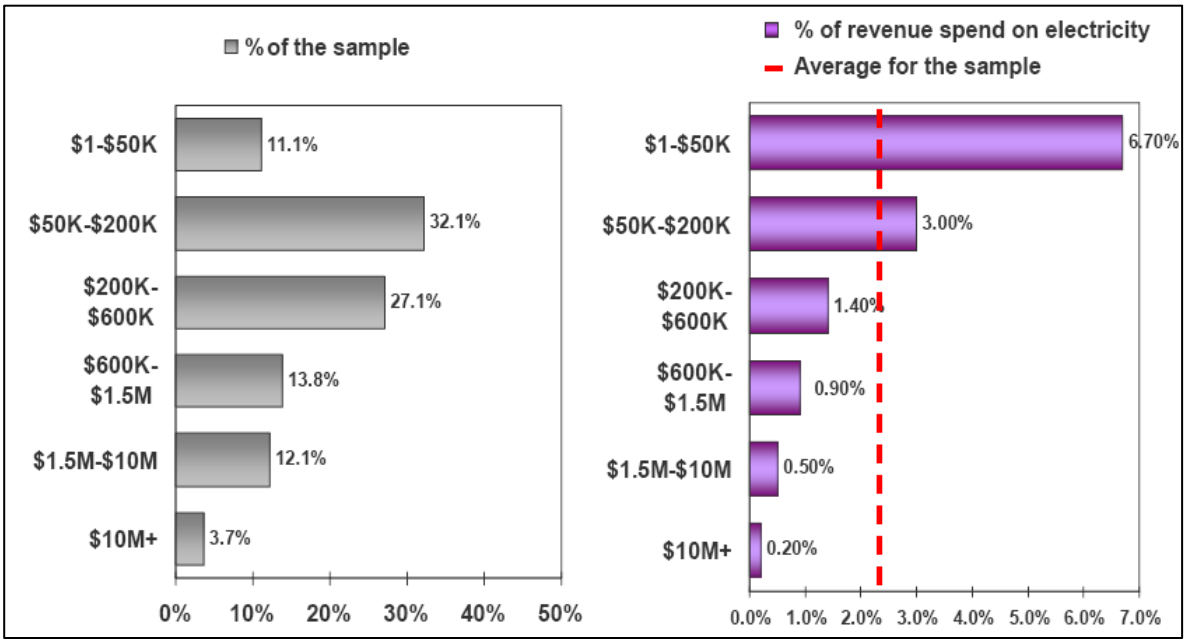


Figure V-2 shows that the U.S. businesses with smaller sales spend much higher percentages on electricity than larger businesses. Small businesses earning less than $50,000 in sales spend 34 times more on electricity as a percentage of revenue than large businesses with $10 million or more in sales. A 5 percent reduction in electricity expenditures would reduce small business spending on electricity from 6.7 percent to 6.4 percent of each sales dollar while reducing large business spending on electricity from percent to 0.19 percent of each sales dollar. Generally, the smaller a business is, the larger the benefit it receives from a reduction in energy expenditures.

Businesses in general are expected to experience no significant change in energy costs although businesses that currently spend more on natural gas per dollar of sales will experience slight increase in their total energy costs.

Figure V-2. Percent of Revenue Spending on Electricity by Business Revenue



6 CONCLUSIONS

On average, businesses in California are expected to experience a slight decrease in energy expenditures. Further, any savings from the transportation measures in the Draft Scoping Plan, which are not reflected in this analysis, would yield further benefits.

A reduction in electricity bills will dramatically improve California business competitive position in the nation, moving it from 7th highest to the 19th highest in the nation in terms of electricity expenditures per sales dollar. However, we expect large businesses, especially in the short run, to be more responsive to the changes required by the Draft

Scoping Plan than small businesses because of their greater ability to invest in energy efficient technologies to achieve energy savings. These results are consistent with the results of the macroeconomic analysis presented in previous sections that shows the overall energy cost savings would stimulate increased economic activity, resulting in increased output and personal income.